



HIGH VOLTAGE SYSTEM: ISOLATION FAULTS

MODEL

F15 PHEV (X5 xDrive40e)	F30 PHEV (330e iPerformance)
G12 PHEV (740e xDrive iPerformance)	G30 PHEV (530e iPerformance)

Vehicles produced through 6/1/17

SITUATION

The Check Control message (CCM), "Powertrain malfunction!" is displayed.

The following fault codes are entered in the fault memory of the electrical machine electronics (EME) or the battery management electronics (SME):

EME:

- 22280F - High-voltage electrical system: Insulation resistance below threshold (fault)
- 222814 - High-voltage electrical system: Insulation resistance below warning threshold

SME:

- 21F14C - High-voltage system: Isolation resistance below the warning threshold value (fault) when switch contactors closed
- 21F14D - High-voltage system: Isolation resistance below the warning threshold value when switch contactors closed

CAUSE

Possible moisture in the plug connection of the electric heater (EH) and/or the high voltage (HV) cable.

CORRECTION

Diagnose with ISTA and replace EH and/or HV cable, as indicated.

PROCEDURE

For conditions that are similar to the situation described:

To locate the isolation fault, diagnose the high-voltage electrical system, with ISTA test module:

High-voltage electrical system: Locate insulation fault (ABL-DIT-AT6100_HVISOGEN3)

Did the test module identify the EH as the single cause of the isolation fault?

YES- replace the EH according to the repair instructions.

NO – go to next question.

Did the test module identify the high-voltage cable between the EH and convenience charging electronics (KLE) as the single cause of the isolation fault?

YES - replace the EH **AND** the HV cable between the EH and the KLE according to the repair instructions.

NO- continue diagnosis with ISTA

PARTS INFORMATION

F15 PHEV

Part Number	Description	Quantity
64 12 6 827 187	Flow heater electr.	1
61 12 6 800 373	High-voltage cable set, EDH	1

F30 PHEV

Part Number	Description	Quantity
64 12 6 827 184	Flow heater electr.	1
61 12 6 824 108	High-voltage wire for EDH	1

G12 PHEV

Part Number	Description	Quantity
64 12 6 998 052	Flow heater electr.	1
61 12 6 823 582	High-voltage cable set, EDH	1

Bulk Materials

Part Number	Description	Quantity
82 14 1 467 704	Antifreeze (One Gallon)	As needed

WARRANTY INFORMATION

Covered under the terms of the BMW New Vehicle Limited Warranty for Passenger Cars and Light Trucks or the BMW Certified Pre-Owned Program.

Defect Code:	6421054800	
Labor Operation:	Labor Allowance:	Description:
00 00 006	Refer to KSD2	Performing "vehicle test" (with vehicle diagnosis system – checking faults) (Main work)
Or:		
00 00 556	Refer to KSD2	Performing "vehicle test" (with vehicle diagnosis system – checking faults) (Plus work)

And:		
61 21 528	Refer to KSD2	Connect an approved battery charger/power supply (indicated in KSD2 as "Charging battery to EME")
And:		
61 25 910	Refer to KSD2	Recharging high-voltage battery unit (to high voltage charging unit)
And, as applicable:		
61 00 006	Work time (WT)	Performing vehicle diagnosis – test module

And, for the:

F30 and G12

Labor Operation:	Labor Allowance:	Description:
64 12 821	Refer to KSD2	Replace electrical heating (after vehicle diagnosis)

Or for the:

F15 only (Temporary Procedure)

Labor Operation:	Labor Allowance:	Description:
64 99 000	19 FRU (F15)	Work time to replace electrical heating (after vehicle diagnosis)

Flat rate labor operation code 64 12 821 is planned to be available for the F15 with the release of the KSD2 04/2018. Once it becomes available, please use and claim labor operation 64 12 821 instead of work time labor operation 64 99 000.

And, when the:

HV cable between the EH and the KLE needs to be replaced (F15, F30 and G12)

Labor Operation:	Labor Allowance:	Description:
61 99 000	10 FRU	Work time for the additional work replace the high-voltage cable set between the EH and the KLE (EDH)

Refer to KSD2/AIR for the corresponding flat rate unit (FRU) allowances.

Work time (WT) labor operation codes 61 00 006, 64 99 000 and 61 99 000 are not considered a Main labor operations.

- WT labor operation code 61 00 006 does require an individual punch time.
- Since the FRU allowances to be claimed for WT labor operations codes 64 99 0009 and 61 99 000 are specified, separate punch times are not required.

However, these WT labor operation codes, when claimed, all require an explanation on the repair order and in

the claim comments section.

And, as needed:

Sublet – Bulk Materials

Sublet Code 4	See sublet reimbursement calculation below	Reimbursement for replacing the drained quantity of antifreeze/coolant (Bulk container reference P/N 82 14 1 467 704, one gallon container. Do not use this part number for claim submission)
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Sublet calculation: BMW antifreeze/coolant (Bulk container reference P/N 82 14 1 467 704) – replacing the drained quantity (50/50 mixture) is at the dealer net price plus your center's handling.

Enter this material cost in sublet and itemize the amount on the repair order and in claim comment section.

Overlapping Labor Procedure – Other Repairs

If invoicing the KSD2 flat rate labor operation codes for other repair work results in overlapping labor, for those flat rate labor operations that are affected, you can now:

- Replace the stated KSD2 “FRU allowance” with a “reduced FRU value” to eliminate the overlapping labor.

For help in identifying the overlapping labor, please refer to the AIR FRU Plausibility Check (Overlapping Labor Tool) that is located in the AIR Client.

Eligible other repair work being claimed under a different defect code will require separate punch times.

On the repair order and in the claim comment section, please identify and itemize those labor operations being claimed with a “reduced FRU value.”

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